



02/19/02
PATENT

Title: FLEXURE BASED
MACRO MOTION
TRANSLATION STAGE

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail on the date indicated above and is addressed to:

Commissioner for Patents
Washington, DC 20231

Jo Ann Scott

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-captioned application as follows:

In the Specification:

15 Please cancel claims 51-61, 63-166, and 168-211.

In the Specification:

Please amend the following paragraphs of the specification to read as shown below. A
20 “marked up” version of the amended paragraphs is included as an attachment to the paper.

Please amend the paragraph starting on page 3, line 3 to state:

“The embodiments described herein include methods and systems for precise positioning of an object along an axis or within a plane. For example, certain embodiments presented herein may relate to methods and systems for positioning a substrate as part of a substrate patterning method or system.”

Please amend the paragraph starting on page 3, line 8 to state:

“In certain embodiments, apparatus for positioning an object may include a holding member configured to hold the object to be positioned. The holding member may be constrained to motion along a first axis by a first set of flexure linkages. The first set of flexure linkages may include a plurality of elongated members. In an embodiment, the elongated members may be coupled together by flexure joints to form the flexure linkages. In some embodiments, the flexure joints may have a range of motion of greater than 20 degrees. In some embodiments, the flexure joints may have a range of motion of greater than 40 degrees. The first set of flexure linkages may include two or more flexure linkages arranged symmetrically. The apparatus may be arranged to avoid any kinematic singularities resulting from the symmetrical arrangement of the flexure linkages.”

Please amend the paragraph starting on page 3, line 27 to state:

“In certain embodiments, apparatus for positioning an object may include a holding member configured to hold the object to be positioned. The holding member may be constrained to motion within a single plane (e.g., along a first axis and a second axis) by a first set of flexure linkages, and a second set of flexure linkages. The second set of linkages may be configured as described above regarding the first set of flexure linkages. For example, the first set of linkages

may be coupled to the holding member and a platform. The second set of linkages may be coupled to the platform. Thus, the first set of linkages may constrain motion of the holding member to a first axis, and the second set of linkages may constrain motion of the holding member to a second axis.”

Please amend the paragraph starting on page 4, line 15 to state:

“Embodiments of apparatus for positioning of an object by use of flexure linkages, as described above, may position the object within a predetermined range of motion. In such embodiments, the ratio of the range of motion of the holding member to a characteristic length of the apparatus may be greater than 0.05. In some embodiments, the ratio of the range of motion of the holding member to a characteristic length of the apparatus may be greater than 0.2. In some embodiments, the ratio of the range of motion of the holding member to a characteristic length of the apparatus may be greater than 0.3. The characteristic length may be the square root of the footprint area of the apparatus. The foot print area of an apparatus may be the area of space taken up by the apparatus. Typically the footprint of an apparatus includes the area of the floor upon which it rests or that is covered by the apparatus.”

Please amend the paragraph starting on page 4, line 26 to state:

“In an embodiment, an apparatus for positioning an object may include a substrate positioning device. A substrate positioning device may be used in methods and systems for patterning substrates. In such embodiments, a substrate patterning system may include a substrate patterning device such as, but not limited to: an imprint lithography device, a photolithography device, an electron beam patterning device, an x-ray patterning device, an ion beam patterning device, an extreme ultraviolet lithography patterning device, or a direct-write laser patterning device.”

Please amend the paragraph starting on page 5, line 1 to state:

“For example, a system for forming a pattern on a substrate includes a patterned template; a patterned template holder; and a substrate positioning device. The system may further include a measurement device for determining the alignment between the patterned template and the substrate. For example, the measurement device may include an optical microscope. The optical microscope may include a polarizing light filter and/or a polarized light source.”

Please amend the paragraph starting on page 7, line 11 to state:

“In an embodiment, a substrate positioning device may be used in conjunction with inspection devices in methods and systems for inspecting substrates. Inspection devices may include, but are not limited to: a scanning electron microscope, a scatterometer, a reflectometer, a coherence probe microscope, an interference microscope, a scanning tunneling microscope, an optical profilometer, an atomic force microscope, a confocal microscope, a transmission electron microscope, or an electrical fault testing device.”

Please amend the paragraph starting on page 7, line 18 to state:

“A method of forming a pattern on a substrate may include positioning a substrate on a substrate positioning device. The substrate positioning device may be coupled to a patterning device. The substrate positioning device may be an apparatus for positioning an object as described above. The method may further include patterning the positioned substrate. Likewise, a method of inspecting a substrate may include positioning a substrate on a substrate positioning device. The substrate positioning device may be coupled to an inspecting device. The substrate positioning device may be an apparatus for positioning an object as described above. The method may further include inspecting the positioned substrate.”

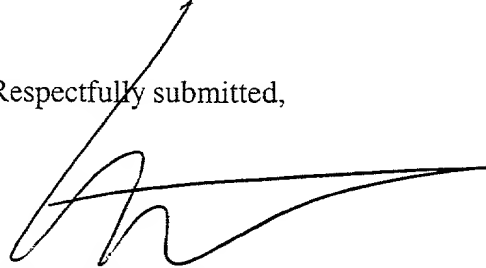
Please amend the paragraph starting on page 11, line 27 to state:

“The methods and system described above, may for example, be used to form a
5 semiconductor device, an optical device, a photonic device, a magnetic storage device or thin film
head, a display device, etc.”

Choi, et al.
09/934,248

It is believed that no fees are due in connection with the filing of this Preliminary Amendment. However, if any fees are due, the Commissioner is hereby authorized to deduct said fees from Conley, Rose & Tayon Deposit Account No. 50-1505/5119-08401/EBM.

Respectfully submitted,



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